Unit-2 Mastery Assessment (version 610)

Question 1 (10 points)

Let f represent a function. If $f[50] = 25$, then there exists a knowable solution to the equation below.
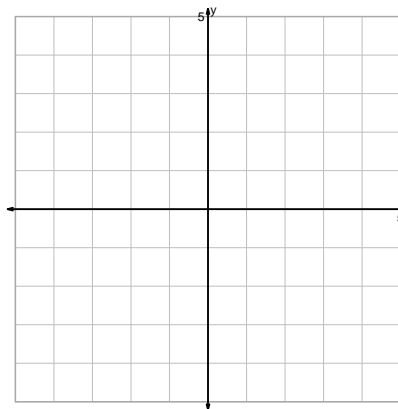
$$y = 2 \cdot (f[5(x - 38)] - 10)$$
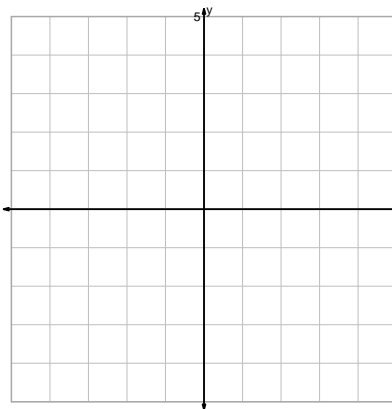
Find the solution.

$x =$

$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
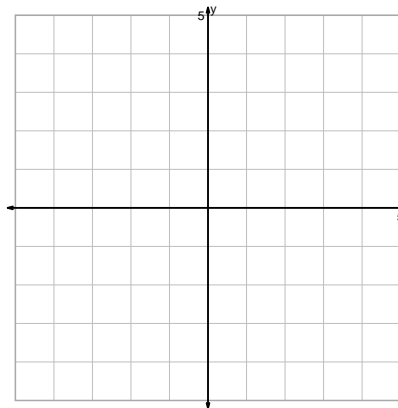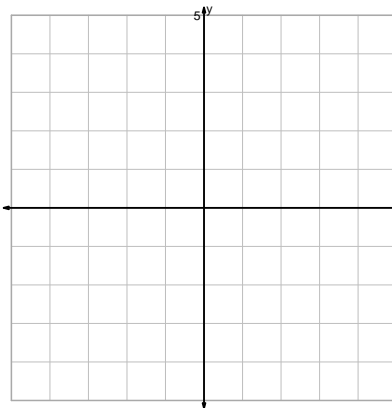
$y = x^2 + 2$

$y = \dfrac{x^3}{2}$

$y = \log_2\!\left(x\right) - 2$
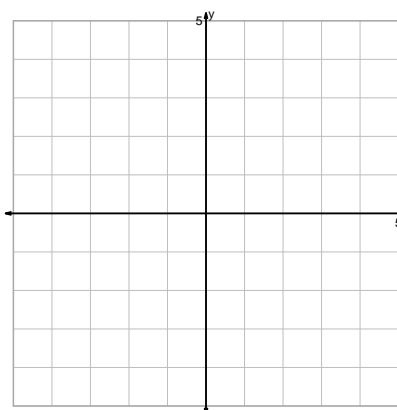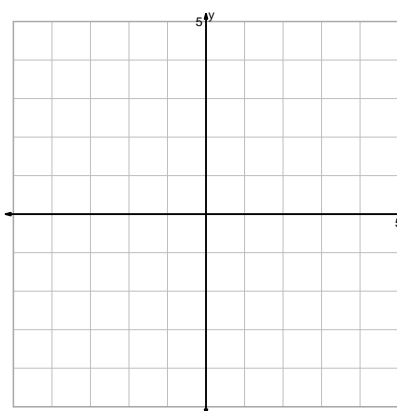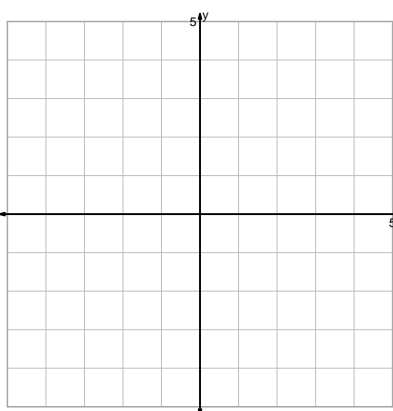
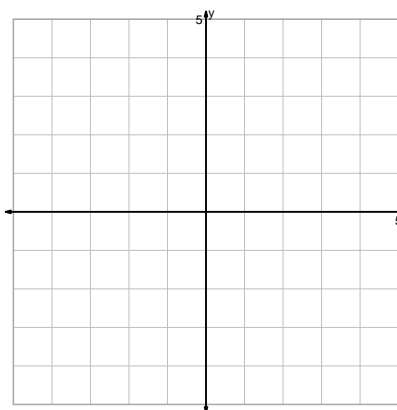$y = \left(x - 2\right)^2$
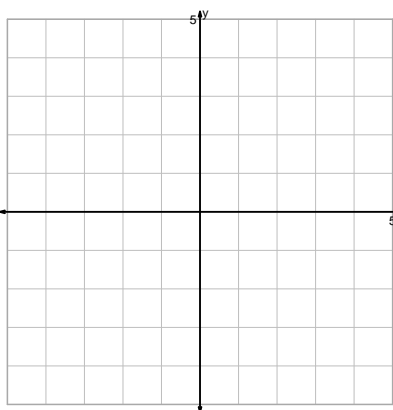
$y = \sqrt[3]{2x}$

$y = 2^{x+2}$
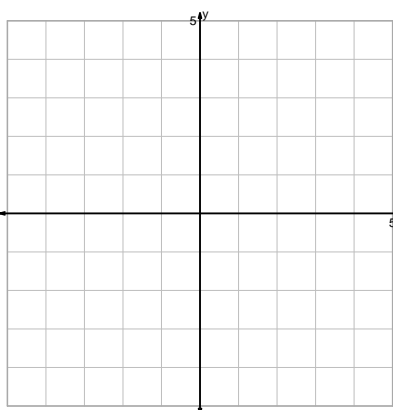
$y = -\sqrt{x}$
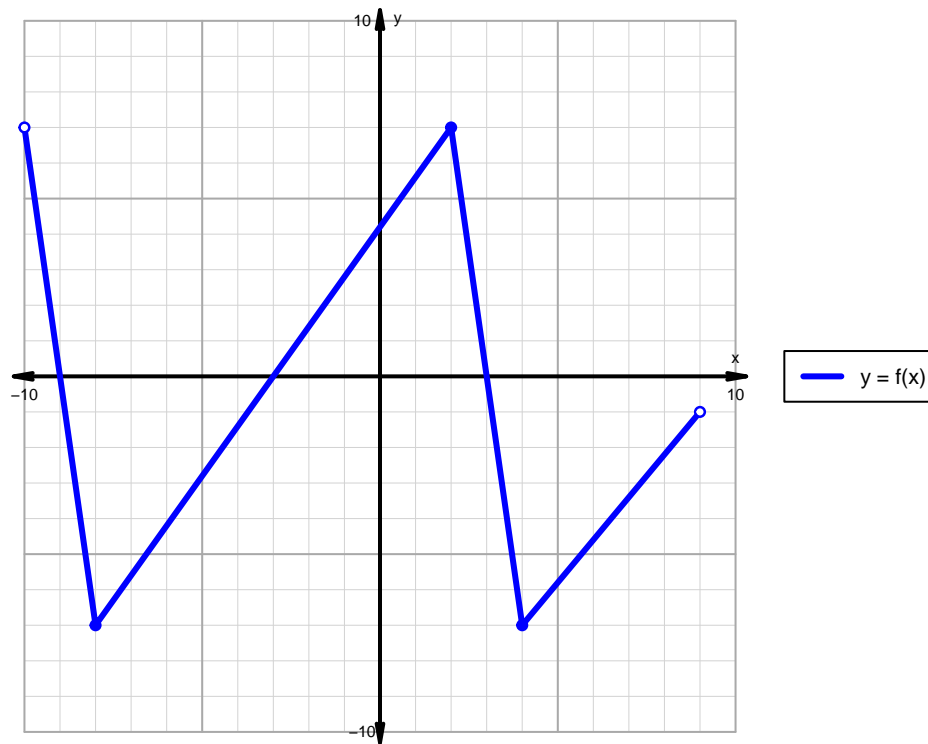
$y = 2^{-x}$

$y = 2 \cdot x^3$

$y = \sqrt[3]{\dfrac{x}{2}}$
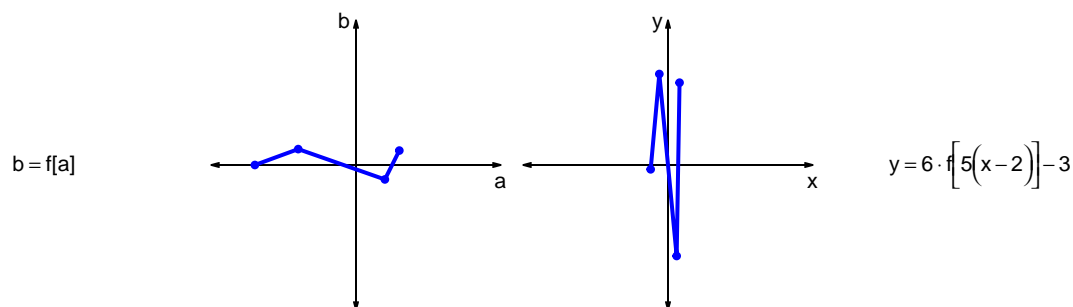
Question 3 (20 points)

A function is graphed below.

Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 6 \cdot f[5(x-2)] - 3$ are represented below in a table and on graphs.

a	b	x	y
-70	0	-12	-3
-40	11	-6	63
20	-10	6	-63
30	10	8	57

$b = f[a]$

$y = 6 \cdot f\left[5\left(x-2\right)\right] - 3$

a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 6 \cdot f[5(x-2)] - 3$?

Question 5 (10 points)

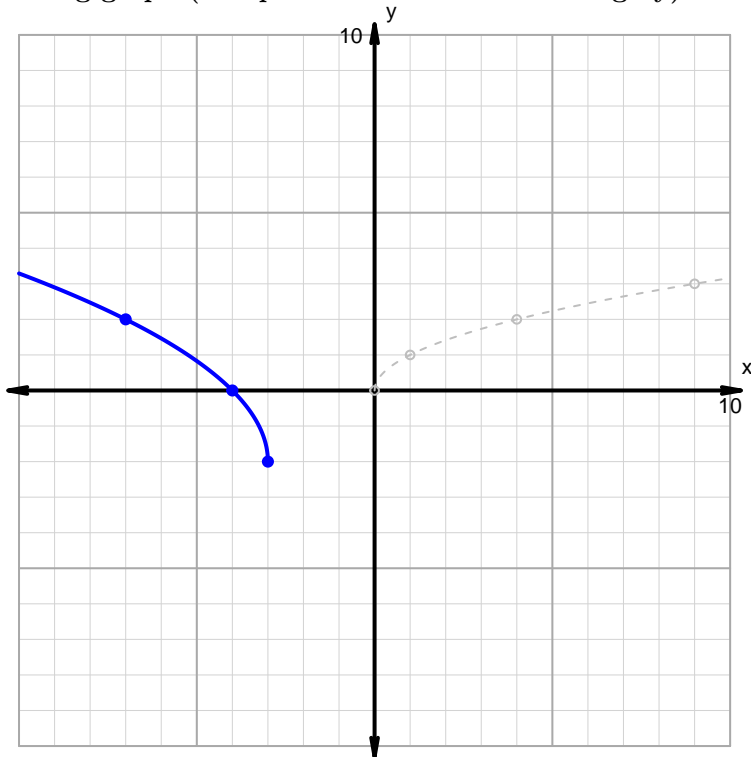A parent square-root function is transformed in the following ways:

Horizontal transformations

1. Horizontal reflection over y axis.
2. Translate left by distance 3.

Vertical transformations

1. Translate down by distance 1.
2. Vertical stretch by factor 2.

Resulting graph (and parent function in dashed grey):

- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{2} \cdot |x - 4| - 1$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	